CENTRAL FILES NUMBER entral File 1596
44-5-36 Pile Waste Disposed

Date <u>5/23/44</u>	Those Eligible To Read the	
Subject WASTE DISPOSAL FROM SITE X	Attached	
By Leverett	Copy 2 of 7.1 Hay, Vangnan,	
To Hamilton	Q St. th	
Before reading this document, sign and date	below (3)	
Name Date	Name Date	
M2 Swith 5/27		
At OKay 6/2		

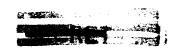
This document has been approved for release to the public by:

ChemRisk Document No. 1596

Dand R Hamin 4/2//95

o gure

7 courses, Series A



Copies to:

~2 - Kay, Vaughan, ₹. Q. Smith

3 - Doen

4 - Apple

5 - Leverett

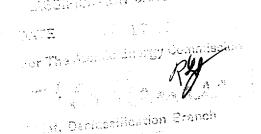
6 - Reading File

7 - Central File

lay 23, 1944

Dr. J. G. Hamilton Crocker Radiation Laboratory University of California Berkeley, California

Dear Dr. Hamilton



HASTE DISPOSAL FROM SITE X

In accordance with our arrangement made during your visit here approximately two weeks ago, I am setting down herewith the state of the waste disposal problem as it is now seen.

Shortly after your departure, we recommended to Mr. Kay that two basins made of earth and holding respectively about 1,000,000 gallens and 300,000 gallens be constructed in the area south of the two ceeling pends. Construction based on this recommendation has started although there has been some modification of the original suggestion and there now will be only one basin having a capacity of 1.6 million gallens. Presumably this will be ready some time in July.

Me find that dilution of the supernate from the underground waste sterage tanks in the ratio of 1 to 35 with plant cooling water produces a precipitate and that, after settling, this precipitate carries down all but about 10% of the beta activity originally in the active waste. The cooling water contains amounts of suspended silt which vary from day to day, but we find that this variation does not influence the final concentration of activity in the supernate, but that more rapid settling and carry-down of activity are achieved when the water is relatively turbid than when it is clear. The degree of turbidity depends on local weather conditions.

The activity contained in the supernate from these settling tests will correspond to slightly more than .3 eurie/day in the discharge water from the plant if this means alone is used for reducing the radioactivity of the discharged water.

Some percolation tests have been made using samples of soil taken from the area in which the basin is being dug. The rate of percelation of the diluted waste through this soil is approximately 0.07 cm/day for a hydraulic gradient of 1 cm of water per linear cm of soil. This rate is so slow that there seems to be no reason for concern about the possibility that activity will seep through the walls of the basin.



Measurements of the activity in the water which did seep through the bed of earth in the experiments show that the activity was reduced by a factor of about 5, that is, if all the waste were to be so treated, a discharge from the plant would be reduced to approximately 60 mc/day. The quantity of diluted waste which can be thus decontaminated by unit volume of sell is not bet known but is greater than seven volumes of diluted waste would be reduced to approximately 60 mc/day.

Precipitation tests in which aluminum, iron and calcium precipitates were made to form the diluted wastes show that only the calcium precipitate affected the decontamination of the supernate very much. I think that there results probably were available at the time of your visit. The analysis on the sludge has been completed and is reported as follows:

S i0 2	#1 67.4%	81.5%
Fe ₂ 0 ₃	2.0	1.6
A1 ₂ 0 ₃	12.5	7.2
MgO	2.1	0.9
CaO	3.8	0.7
PO4	0.4	an direct
F	26.0	11.5

#1: Close to Pond #4: Farther Dewnstream

Both these pieces of information have been supplied to us by R. S. Apple.

I am sorry to say that we have not yet been able to solve the problem of transportation of the active liquor from here to your laboratory. My impression is that if the samples are sent out, they will have to be sent by truck. This, of course, is a considerable expenditure of effort and I should like to have your comment on the wiseness of such a precedure. We are not at present contemplating that a truck will go to california from here for this purpose unless it should become quite urgent.

We are awaiting receipt of the results of the fission assay and of a statement of the tolerable quantities of the materials found in the water discharged from our plant.

Very truly yours,

M. D. WHITAKER, DIRECTOR CLINTON LABORATORIES



